

Appl. No. 10/692,094
Amdt. dated February 24, 2005
Reply to Office action of November 24, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1: (canceled)

Claim 2: (currently amended). ~~The device of claim 1, wherein,~~

~~the face of the vice includes at least one bolt hole, the jaw plate retainer further comprises a housing which is externally threaded for mating with the bolt hole and wherein the retaining pin moves within the housing between a retracted position and an extended position and is spring biased within the housing toward the retracted position.~~

A vice comprising,

two opposing vice jaws, at least one of which may be translated relative to the other for grasping a workpiece between the opposing faces thereof, at least one the opposing faces of one of the vice jaws including at least one internally treaded bolt hole,

at least one jaw plate retainer disposed in the at least one internally threaded bolt hole of the vice jaw face, the jaw plate retainer including an externally threaded housing for mating with the bolt hole of the vice jaw face and a retaining pin having a relatively narrow shank and a relatively wide head, the retaining pin movable within said externally threaded housing between a retracted position and an extended position and biased toward the retracted position, the jaw plate retainer fashioned such that at least a portion of the retaining pin head protrudes from the face of the vice jaw,

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a jaw plate for mounting to the at least one jaw plate retainer, the jaw plate including a retention recess having a detent portion for holding the head of the retaining pin in a fixed position, the retention recess also including a receiving portion for receiving the head of the retaining pin and a guiding portion for guiding the head of the retaining pin between the receiving portion and the detent portion as the jaw plate translates relative to the vice jaw,

whereby the jaw plate may be positioned on one of the vice jaws by action of (i) placing the receiving portion of the retention recess to receive the head of the retaining pin, translating the jaw plate such that the guiding portion of the retention recess guides the head of the retaining pin toward the detent portion and aligning the detent portion with the head of the retaining pin such that the detent portion receives the head of the retaining pin and holds the retaining pin in a fixed position, thereby retaining the jaw plate in a fixed position and whereby the jaw plate may be removed from the vice jaw by a reverse action of translating the jaw plate such that the guiding portion of the retention recess receives the head of the retaining pin from the detent portion and guides the head of the retaining pin to the receiving portion so that the jaw plate may be pulled away from the vice jaw.

Claim 3: (currently amended). The device of claim 1, wherein,

the retaining pin includes a relatively narrow shank and a relatively wider head and a cone frustum shaped portion connecting between the relatively narrow shank and the relatively wider head and wherein the detent portion of the retention recess includes a

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cone frustum shaped pocket for receiving the cone frustum shaped portion of the retaining pin.

Claim 4 (canceled)

Claim 5: (original). A vice comprising,

two opposed vice jaws, at least one of which may be translated relative to the other for grasping a workpiece between the opposing faces thereof,

a least one jaw plate retainer mounted in the face of at least one of the vice jaws, the jaw plate retainer including a retaining pin having a relatively narrow shank and a relatively wide head and a cone frustum shaped portion between the shank and the head, the retaining pin movable between a retracted position and an extended position and biased toward the retracted position, the jaw plate retainer and the retaining pin fashioned so that at least a portion of the retaining pin head protrudes out from the face of the vice jaw,

a removable jaw plate for mounting to the at least one jaw plate retainer including a retention recess having a wide portion, a relatively narrow portion and a detent portion, the wide portion for receiving the head of the retaining pin, the relatively narrow portion having shoulders that are spaced wide enough to receive the shank of the retaining pin and spaced narrow enough to catch the sides of the cone frustum shaped portion of the of the retaining pin, the shoulders also ramp shaped for urging the head of the retaining pin away from the face of the jaw as the jaw plate is translated relative to the vice jaw and the

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detent portion having a cone frustum shaped walls for receiving the cone frustum shaped portion of the retaining pin,

whereby the jaw plate may be rapidly secured to one of the vice jaws by action of (i) placing the wide portion of the retention recess over the head of the retaining pin, (ii) applying a force to the jaw plate from the direction of the detent portion of the retention recess thus sliding the jaw plate relative to the vice jaw as the shoulders of the slot portion pull the biased retaining pin away from the vice jaw, (iii) continuing to slide the jaw plate as the biased retaining pin head pulls toward the jaw face and down into the detent portion of the retention recess,

and whereby the jaw plate may be rapidly removed from the vice jaw by action of (i) applying a force to the jaw plate from the direction opposite the detent portion of the retention recess causing the head of the retaining pin to pop out of the detent portion of the retaining recess up into the slot portion of the retaining recess, (ii) sliding the jaw plate to align the retaining pin with the relatively wide portion of the retaining recess and (iii) translating the jaw plate away from the vice jaw.

Claim 6. (original) The device of claim 5, wherein,

the face of the vice includes at least one bolt hole, the jaw plate retainer further comprises a housing which is externally threaded for mating with the bolt hole and wherein the retaining pin moves within the housing between a retracted position and an extended position and is spring biased within the housing toward the retracted position.

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Claim 7. (original) A vice comprising,

two opposed vice jaws, at least one of which may be translated relative to the other for grasping a workpiece between the opposing faces thereof,

two pairs of jaw plate retainers mounted in the opposing faces of the vice jaws, the jaw plate retainers each including a retaining pin having a relatively narrow shank and a relatively wide head and a cone frustum shaped portion between the shank and the head, each retaining pin movable between a retracted position and an extended position and biased toward the retracted position, the jaw plate retainers fashioned so that at least a portion of the retaining pin heads protrude out from the faces of the vice jaws,

removable jaw plates for mounting to the jaw plate retainers including retention recesses spaced for receiving the retaining pins of the jaw plate retainers, the retention recesses each having a wide portion, a relatively narrow portion and a detent portion, the wide portion for receiving the head of one of the retaining pins, the relatively narrow slot portion having shoulders that are spaced widely enough to receive the shank of one of the retaining pins and spaced narrowly enough to catch the cone frustum portions of the retaining pins, the shoulders also ramp shaped for urging the head of each retaining pin away toward the extended position and the detent portions of the retention recesses each having a cone frustum shaped for receiving the cone frustum shaped portion of the retaining pin,

whereby one of the jaw plates may be rapidly secured to one of the vice jaws by in an accurate and repeatable fashion by action of (i) placing the wide portion of the retention recesses over the heads of the retaining pins, (ii) applying a force to the jaw plate from the direction of the detent portions of the retention recesses thus sliding the

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jaw plate relative to the vice jaw as the shoulders of the narrow portions of the retention recesses pull the biased retaining pins toward their extended positions, (iii) continuing to slide the jaw plate as the biased retaining pins pulls toward the jaw face and down such that the heads of the retaining pins seat into the detent portion of the retention recesses, and whereby the jaw plate may be rapidly removed from the vice jaw by action of (i) applying a force to the jaw plate from the direction opposite the detent portions of the retention recesses causing the heads of the retaining pins to pop out of the detent portions of the retaining recess up into the slot portions of the retaining recesses, (ii) sliding the jaw plate to align the retaining pins with the relatively wide portions of the retaining recesses and (iii) translating the jaw plate away from the vice jaw.

Claim 8. (currently amended) The device of claim 7, wherein,

the face of each vice jaw includes two spaced bolt holes, the jaw plate retainers each further ~~comprise~~ comprising a housing which is externally threaded for mating with the bolt holes and wherein the retaining pin moves within the housing between a retracted position and an extended position and is biased by a spring within the housing toward the retracted position.